

and area, apical margin and area, and inner angle (narrowly) luteous; an irregular black spot at marginal base, and another of the same colour at apex, both contained in the luteous areas. Membrane fuscous. Abdomen above pale testaceous, connexivum luteous, with a series of subquadrate black spots. Body beneath pale ochraceous; a submarginal streak on prosternum, margins of pronotal angles, a round spot on each side of pro- and mesosternum, lateral margins of metasternum, a marginal segmental series of irregular spots, stigmata, a double series of irregularly arranged smaller spots on inner side of stigmata, and two small transverse streaks on base and about centre of second segment black. Femora ochraceous, spotted with fuscous, with the apices of that colour; tibiæ luteous, base and apex dark fuscous; tarsi luteous, apical joint dark fuscous. Rostrum ochraceous, apex fuscous, about reaching intermediate coxæ. Anal appendage armed with a sharp acute spine on each side.

Long. 12 millim., lat. pronot. ang. 5 millim.

V.—*Revision of the Lepidopterous Genus Azelina, with Descriptions of new Species in the Collection of the British Museum.* By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

THE genus *Azelina* was founded in 1857, by M. Guénée, for the reception of a number of New-world Geometrites with the external aspect of the European genus *Odontopera*; to the latter group he added two African and one Brazilian species. He remarks with justice, "Il a beaucoup de rapports avec mon genre *Azelina*, et je ne serais pas étonné que, par la suite, quand beaucoup de nouvelles espèces se joindront à l'un et à l'autre, la séparation n'en devienne très-délicate." *O. edentaria*, which we have from Rio Janeiro, certainly might be placed with equal satisfaction in either genus; however, for the present I leave the question of the probable identity of these two groups, and proceed, in the first place, to criticise the material wrongly placed under *Azelina*, and, in the second place, to enumerate the remaining species.

The following species are wrongly placed in *Azelina* by Walker and others:—

"*Azelina*" *peplaria* = *Gonodontis peplaria*, Hübn., agrees far better with *Endropia*.

"*Azelina*" *neonaria*, Walk., is a *Hyperetis* close to *H. nyssaria* and nearly allied to *Selenia cesionaria* (= *Macaria laticincta*).

"*Azelina*" *atropunctaria*, Walk., may be referred to *Endropia*.

"*Azelina*" *xylinaria*, Guénée, is referable to the genus *Meticulodes*.

"*Azelina*" *clelia*, Cramer, is an *Orsonoba*.

"*Azelina*?" *gabrararia*, Walk., is an *Endropia*.

"*Azelina*?" *aretaria*, Walk., is a *Caripeta* close to *C. austiorata*.

"*Azelina*" *ceriata*, Walk. MS., is much nearer to *Meticulodes* than *Azelina*.

"*Azelina*?" *apicitruncaria*, Herr.-Sch., has nothing in common with the genus; it is closely allied to (if distinct from) the genus *Hyperythra*, is conspecific with *H. agasusaria*, Walk., and the male of *Caberodes*? *bilbisaria*, Walk. It may be placed provisionally under the generic name *Thysanopyga*, proposed for it by Dr. Herrich-Schäffer.

"*Azelina*?" *perdica*, Cramer, is an *Angerona* barely distinct from *A. aimylusaria*, Walker.

"*Azelina*" *metagonaria*, Walk., is a *Macaria*.

"*Azelina*" *fedaria*, Walk., is identical with *Endropia mestusata*, and possibly conspecific with *E. hypochraria*; the latter, however, seems distinct.

"*Azelina*" *immundaria*, Walk., evidently does not belong to the genus; but it will be necessary to see the type to decide to what group it is referable—possibly to *Thysanopyga*.

"*Azelina*?" *indecoraria*, Walk., is closely allied to *Pachycnemia*, with which it might provisionally be placed.

The following have been referred either to *Azelina* or *Gonodontis*, which Guénée regarded as synonymous with it:—

"*Gonodontis*" *antucaria*, Felder & Rogenhofer, which is probably a species of *Eurymene*, but certainly not an *Azelina*.

"*Azelina*?" *claustraria*, Felder & Rogenhofer, is a *Lagya* or a nearly allied genus, and identical with *Andania scriptipennaria*, Walk.

"*Azelina*" *cyclodaria*, Felder & Rogenhofer, is evidently allied to *A. xylinaria*, Guénée, and therefore is not a typical *Azelina*.

"*Azelina*" *volckenjata*, Snellen, is *Clysia succedens* of Walker, and of course has nothing in common with *Azelina*.

"*Gonodontis*" *semilutearia*, Felder & Rogenhofer, is nearer to *Angerona* than to *Azelina*.

"*Gonodontis*" *nelsonaria*, Felder & Rogenhofer, is congeneric with my *G. felix*.

"*Azelina*" *maracandaria*, Erschoff, is more like a *Timandra* than an *Azelina*; but its coloration is more suggestive of the Larentiidæ.

"*Gonodontis felix*", Butler, was never intended to be regarded as an *Azelina*. In naming this species I followed Felder. Whether the name *Gonodontis* can be retained for this and allied species I leave Mr. Kirby to decide in his forthcoming Catalogue of Moths; and at the same time I take this opportunity of thanking him for lending me his list of the species of *Azelina* collated from Walker's Catalogues and the 'Zoological Records' up to 1876; the remaining 'Records' and one or two species referred to other genera than *Azelina* I have looked up subsequently to going through Mr. Kirby's catalogue list.

### *List of Species.*

#### 1. *Azelina lustraria*.

*Azelina lustraria*, Guénée, Phal. i. p. 156. n. 242 (1857).

Rio Janeiro, Rio Jurua (*Trail*). B.M.

The example from the Amazons is rather redder in colour than those from Rio Janeiro: the species approaches in structure the genus *Meticulodes*.

#### 2. *Azelina stuposaria*.

♀. *Azelina stuposaria*, Guénée, Phal. i. p. 160. n. 252 (1857).

*Azelina fuscularia*, Felder & Rogenhofer, Reise der Nov., Lep. v. pl. cxxiii. fig. 11 (1876).

♂ ♀, Rio Janeiro. B.M.

The male is smaller than the female; the obtuse apical and subapical denticles are very feebly indicated; and the secondaries are entire; the basal area of the primaries to the discal line is much darker and washed with lilacine, but the external area is distinctly paler and more flesh-tinted.

#### 3. *Azelina Trailii*, sp. n.

♂. Allied to *A. stuposaria*. Primaries above with the basal third pale sandy brown, obliquely striated on the costa and transversely below the costa with grey; second third occupied by the central belt, which is reddish olivaceous, bounded by the ordinary lines, which are blackish; the inner line undulated, the outer line slightly sinuous, obtusely biangulated; a large ochreous spot just within the superior angle of the cell; reniform spot linear, grey, with a white dot on its upper half; an irregular and badly-defined external grey border to the central belt, followed immediately by three unequal black spots; external third testaceous, covered with little transverse blackish striations; apex dusky; one or two submarginal black dots; two or three dull rust-coloured spots

on the disk: secondaries greyish brown, striated with grey; basal two thirds of abdominal border reddish; discal line abbreviated, blackish; a large patch of ochraceous at anal angle, extending from the abdominal margin to the third median nervule; a rust-red spot on the first median interspace; fringe testaceous: body above reddish olivaceous, the abdomen greyish at the sides. Wings below brownish grey, mottled with darker grey and ochreous; a white dot at the end of each cell; discal line white, indistinct on the primaries, zigzag and margined towards the abdominal border with black on the secondaries; apical area of primaries rust-red internally, blackish externally, a diffused white patch across the median interspaces: secondaries with the anal area stramineous, changing to ochreous towards the second median vein. Body below greyish brown. Expanse of wings 1 inch 8 lines.

Pariti, Rio Purus (*Dr. Trail*). Type B.M.

The wings of this species have the usual apical and sub-apical denticles to the primaries, but are otherwise entire as in *A. stuposaria*.

#### 4. *Azelina saturata*.

♀. *Azelina saturata*, Walker, Journ. Linn. Soc. ix. p. 196 (1866); ♂, Felder & Rogenhofer, Reise der Nov. Lep. v. pl. cxxiii. fig. 33 (1876).

Bogota and Venezuela.

How Dr. Felder managed to identify this species I cannot comprehend; nor do I care to question the correctness of the identification. Without seeing the type, I should have despaired of even guessing at what Walker's species was like, since that author states that it is referable to a new section of the genus, whereas he included no less than eight distinct genera in what he regarded as the typical section. The species identified by Dr. Felder is moreover perfectly typical, although in pattern it somewhat resembles *A. anceta*.

#### 5. *Azelina curvistrigaria*.

*Pero curvistrigaria*, Herrich-Schäffer, Zool.-mineral. Ver. Corr. Blatt, xxiv. p. 184 (1870).

Cuba.

Allied to *A. Hübneraria*, but said to be of a more cinnamon-brown colour and with a black lunule in each cell.

#### 6. *Azelina detractaria*.

*Nepitia detractaria*, Walker, Cat. Lep. Het. Suppl. v. p. 1565 (1866).

Venezuela (*Dyson*). Type B.M.

This is a perfectly typical *Azelina*, although Walker says that it is "most allied to *Fascellina*."

#### 7. *Azelina Hübneraria*.

*Gonodontis ancetaria*, Hübner, Samml. exot. Schmett. ii. Lep. v., Geom. i., Amplæ iii., Eusareæ A, Capaces 3, figs. 1-4 (1806).

*Azelina Hübneraria*, Guénéé, Phal. i. p. 159. n. 249 (1857); Walker, Cat. Lep. Het. xx. p. 186. n. 1 (1860).

New York (*E. Doubleday*). B.M.

The two following may be fine varieties of this species:—

#### 8. *Azelina honestaria*.

*Azelina honestaria*, Walker, Cat. Lep. Het. xx. p. 258 (1860).

Massachusetts (*Packard*). Type B.M.

The type had no locality attached to it; but a second specimen, labelled "*A. Hübneraria*," was received from Dr. Packard. No true *Azelinæ* appear to be included in the letter-press of that author's 'Monograph of the Phalænidæ of the United States.'

#### 9. *Azelina stygiaria*.

*Azelina stygiaria*, Walker, Cat. Lep. Het. Suppl. 5, p. 1548 (1866).

North America. Type B.M.

#### 10. *Azelina Behrensaria*.

*Azelina Behrensaria*, Packard, Proc. Bost. Soc. xiii. p. 386 (1871); Monogr. Phal. United States, pl. xi. fig. 60 (1876).

California.

Dr. Packard says that this is "at once known" (from *A. Hübneraria*) "by the broad fawn-brown central band on fore wings, contrasting with the pale granite ash-grey of the rest of the wings and body." As these are the exact characters of *A. Hübneraria*, I have little doubt that he supposes *A. honestaria* to be the typical form, and has redescribed the latter: this is indeed borne out by the figures on the plates of his 'Monograph;' but the latter are unfortunately not coloured.

#### 11. *Azelina rectisectaria*.

*Gonodontis rectisectaria*, Herrich-Schäffer, Auss. Schmett. pl. lviii. fig. 325 (1850-69).

*Azelina rectisectaria*, Guénéé, Phal. i. p. 157. n. 243 (1857).

Brazil.

Nearest to *A. zalissaria*.



12. *Azelina zalissaria*.

*Azelina*? *zalissaria*, Walker, Cat. Lep. Het. xx. p. 187. n. 4 (1860).  
East Florida (*Doubleday*). Type B.M.

13. *Azelina nerisaria*.

*Azelina*? *nerisaria*, Walker, Cat. Lep. Het. xx. p. 188. n. 5 (1860).  
St. Domingo (*Tweedie*). Type B.M.

14. *Azelina mollis*, sp. n.

♀. Primaries from the base to the discal line bronzy olivaceous, the base and costal border washed with pink; disk dull pinky brown; external border bronzy olivaceous, inclining to cupreous, tapering to the external angle; ordinary lines blackish, the "extrabasilar" or inner line quadrisinuate, arched; the discal line straight and oblique, double, and with a slender parallel greyish line immediately beyond it; a black dot at the end of the cell; apex acute, an acute subapical denticle, and an obtuse angle at the end of the second median branch: secondaries almost entire, dull pinky brown; the basal area feebly washed with bronzy olivaceous up to the discal line, which is nearly straight, blackish, and with a dusky diffused internal streak close to it; fringe bronzy brown; costal border sericeous white: thorax olivaceous, washed behind with pink; abdomen pinky whitish, with olivaceous dorsal streak. Primaries below white, the discoidal area and costa pinky brown; apex whitish brown; external border olivaceous, diffused internally; three or four black-dotted white marginal spots; a diffused greyish discal streak: secondaries pinky brown, irrorated with black, with whitish abdominal border; a greyish transverse zigzag discal line, dotted with black, and becoming wholly black on the abdominal area; a small black discocellular lunule; a marginal series of small white spots: pectus testaceous; legs cream-coloured; venter pinky brown. Expanse of wings 1 inch 8 lines.

Rio Janeiro. Type B.M.

Allied to *A. zalissaria* of Walker.

15. *Azelina Buckleyi*, sp. n.

♂. Primaries above pale olivaceous, speckled with black, the disk and costa sordid white; the central belt darkest; the lines dark purplish brown, extrabasilar undulated, trisinuate internally, but interrupted at the median vein; discal line

double, with pink centre and rusty-orange internal margin; a slight angulation at the lower radial vein; otherwise it is straight and oblique; a dark olivaceous line on the central belt and close to the discal line; a black dot at the end of the cell; a series of unequal black spots close beyond the discal line; one or two brownish spots placed obliquely upon the disk; a submarginal series of white-pupilled black dots; fringe tipped with rust-red: secondaries pale brownish olivaceous, speckled with grey; costal border whitish; a slightly sinuated brown discal line; a submarginal series of black dots: body whitish brown, speckled with black; head and collar olivaceous; a white bar between the eyes. Wings below whitish brown, speckled with black; a black dot at the end of each cell; a dark brown discal line, straight in the primaries, abbreviated and terminating in a large diffused rounded blackish patch at the base of the median interspaces; an oval white patch on the disk beyond it; apical area greenish; black submarginal dots and fringe as above; internal area sericeous white; discal line of secondaries crinkled; submarginal dots smaller and less numerous: body below pale sandy brown. Expanse of wings 2 inches 1 line.

Ecuador (*Buckley*). Type B.M.

Allied to the preceding and succeeding species.

#### 16. *Azelina frigida*, sp. n.

♂. Allied to the preceding species, but altogether of a much paler ashy grey colour; almost white above; the lines as in the preceding species, excepting that they are placed nearer together; the centre of the discal line and its internal border pale buff; no brown oblique spots on the disk; fringe white at base, tipped with dark brown; submarginal black dots with white pupils, as in *A. Buckleyi*. Under surface silvery white, feebly washed with pinkish brownish, excepting on internal area of primaries. Expanse of wings 1 inch 11 lines.

Two specimens. Rio Janeiro. Type B.M.

This is the palest species in the genus; it is of the same form as *A. Buckleyi* and *A. mollis*.

#### 17. *Azelina hædularia*.

*Azelina hædularia*, Guénéé, Phal. i. p. 158. n. 247 (1857).

Rio Janeiro. B.M.

Allied to *A. rapinaria*.

18. *Azelina variaria*.

*Azelina variaria*, Walker, Cat. Lep. Het. xx. p. 257 (1860).

*Azelina spectrata*, Walker, Cat. Lep. Het. xxvi. p. 1516 (1862).

Venezuela. Type B.M.

The original type was probably also received from Venezuela; but all trace of its habitat is lost, and consequently Walker was unable to give it.

19. *Azelina mathilda*, sp. n.

Primaries above pale brown, indistinctly striated with darker brown; ordinary lines very broad, particularly the outer line, which, below the first median branch, is expanded to the middle of the central belt, dark olive-brown; inner or "extrabasilar" line irregularly and widely zigzag; outer line (or band) slightly irregular, with undulated external edge, and enclosing a pale yellow spot on the upper radial interspace; a large, comma-shaped spot and an oblique dash above it at the end of the cell; these markings are jet-black, with pale yellow margins; an ill-defined and interrupted zigzag discal line, the external area beyond which is slightly washed with cupreous; three black-edged submarginal white dots; fringe cupreous: secondaries grey, the veins on the disk cupreous, the costal border whitish; an irregular whitish-edged dusky discal line; a submarginal series of black dots, pupilled with white towards apex; fringe cupreous: thorax olivaceous; abdomen greyish. Under surface reddish brown; primaries with the internal area silvery white; costal border mottled with cream-colour; a white spot at the end of the cell, and a large diffused rounded white patch on the disk; discal line regular, slightly curved, blackish: secondaries irrorated with cream-colour, particularly towards the abdominal margin; a double spot at the end of the cell, and a very irregular discal line black, edged with cream-colour; pectus whitish brown; legs cream-coloured; venter greyish. Expanse of wings 1 inch 8 lines.

Ecuador (*Buckley*). Type B.M.

Nearly allied to *A. variaria* of Walker, but quite distinct.

20. *Azelina semiusta*, sp. n.

Allied to the preceding species, from which it differs in having the primaries pale blue-grey, with the greater part of the central belt, including the inner borders of the ordinary lines, bright ferruginous; the inner line also much less irregular, considerably nearer to the base; no pale yellow spot



on the outer line, but an abbreviated streak of black scales immediately beyond it; the incomplete zigzag discal line represented by three well-defined brown >-shaped markings; a band of black scales, interrupted by elongated red spots on the veins, running across the apical area and then along the outer margin: secondaries with the apical half washed with fiery cupreous; discal line much abbreviated, not extending above the third median nervule: thorax pale ash-grey, with the collar and a dorsal crest pale rust-red; abdomen grey, washed with reddish. Under surface darker and redder than in the preceding species; primaries with a white-edged 7-shaped black marking at the end of the cell; apex, as well as the discal patch, white; the discal line obsolete: secondaries with the black discocellular spot linear; discal line replaced by a very irregular series of whitish-edged grey spots: body below grey, clouded with reddish chocolate; legs chocolate-brown, mottled with cream-colour. Expanse of wings 1 inch 10 lines.

Ecuador (*Buckley*). Type B.M.

21. *Azelina stolidata*.

*Azelina stolidata*, Guénée, Phal. i. p. 158. n. 246 (1857).

Colombia.

Allied to *A. variaria*.

22. *Azelina habenaria*.

*Azelina habenaria*, Guénée, Phal. i. p. 159. n. 251 (1857); Walker, Cat. Lep. Het. xxvi. p. 1516 (1862).

♂ ♀, Rio Janeiro. B.M.

The description by Walker is that of an ordinary male example.

23. *Azelina rapinaria*.

*Azelina rapinaria*, Guénée, Phal. i. p. 157. n. 243 (1857).

Rio Janeiro. B.M.

Allied to *A. stygiaria*.

24. *Azelina vetustaria*.

*Azelina?* *vetustaria*, Walker, Cat. Lep. Het. Suppl. 5, p. 1550 (1866).

St. Domingo (*Tweedie*). Type B.M.

There was not the slightest occasion for Walker to doubt the generic location of this species; and therefore he placed a note of interrogation after it; in other species, where there was not even an approach to the generic characters of *Azelina*, he unhesitatingly described them as members of the genus.

25. *Azelina Lindigi*.

*Azelina Lindigi*, Felder & Rogenhofer, Reise der Nov. Lep. v. pl. cxxiii. fig. 20 (1876).

Bogota.

26. *Azelina fusaria*.

*Azelina fusaria*, Walker, Cat. Lep. Het. xx. p. 256 (1860).

Brazil.

Seems nearly allied to *A. gonopteraria*.

27. *Azelina inconstans*, sp. n.

Primaries above silvery grey, irrorated with black; lines blackish; extrabasililar line deeply dentate-trisinate; a conspicuous jet-black discocellular spot; discal line dark purplish brown internally, double, its outer edge blackish grey; a series of white dots on the veins along the centre of the discal line; the inner edge is also bounded by a series of more or less distinct sienna-red conical spots upon the nervures; these spots, however, are confluent just beyond the cell, and limited internally by three dusky spots; a series of black spots just beyond the discal line, and sometimes three spots in an oblique subapical series; apex whitish, a submarginal series of black dots more or less pupilled on their outer edge with white; fringe whity brown tipped with dark red-brown, or greyish tipped with black: secondaries shining sordid white, with a broad greyish external border, bounded internally by the discal line, which is nearly straight and blackish; a black discocellular dot; a diffused subapical dusky patch; a submarginal series of white-pupilled black dots: thorax greyish brown; abdomen whity brown, becoming silvery grey towards the anus. Wings below silvery grey, washed with pink and irrorated with black; a diffused blackish discal streak preceded by a series of black dots; a black dot on the discocellulars and a submarginal series; apex in all the wings white: primaries with a white diffused externo-discal patch continuous with the internal border, which is also white: secondaries with whitish abdominal area: body below whity brown, speckled with grey. Expanse of wings 1 inch 9 lines.

Two specimens. Rio Janeiro. Type B.M.

This seems to be allied to *A. fusaria*.

28. *Azelina amica*, sp. n.

Allied to the preceding species. Wings more strongly dentated, but of the same general coloration: primaries above with very similar pattern, excepting that the discal line is

quite black, not double, and consequently not white-spotted upon the nervures, that the extrabasilar line is less deeply sinuated and placed nearer to the discal line, and that the black discocellular spot is wanting: secondaries sordid white, becoming grey towards the outer margin, but with no discal line; submarginal dots as in the preceding species. Primaries below silvery white, with brownish costal and external borders; a blackish dot at the end of the cell, and an abbreviated discal series; a snow-white apical costal spot; fringe blackish: secondaries pinky brown, gradually shading into silvery white towards the abdominal margin, speckled with black, and with a broad diffused apical external border; a black discocellular spot: body below white. Expanse of wings 1 inch 9 lines.

Rio Janeiro. Type B.M.

### 29. *Azelina gonopteraria*.

*Azelina gonopteraria*, Guénée, Phal. i. p. 160. n. 253, pl. vi. fig. 5 (1857).

♂ ♀, Rio Janeiro. B.M.

This seems to be the commonest and one of the most variable in tint of all the species in Rio Janeiro.

### 30. *Azelina repellaria*.

♀. *Azelina repellaria*, Guénée, Phal. i. p. 161. n. 254 (1857).

♂ ♀, Rio Janeiro. B.M.

The male is slightly greyer than the female, and in form more like *A. stuposaria*, the apical and subapical denticles of the primaries only being indicated.

### 31. *Azelina poaphilaria*.

*Azelina poaphilaria*, Guénée, Phal. i. p. 161. n. 256, pl. iv. fig. 5 (1857).

♂ ♀, Rio Janeiro. B.M.

Judging from the figure alone, I should not have retained this species in the genus; the insect, however, has well-defined though short denticles to the outer margin of the primaries and the usual angle at the extremity of the second median branch.

### 32. *Azelina imperfectaria*.

♂ ♀. *Azelina imperfectaria*, Guénée, Phal. i. p. 161. n. 255 (1857).

♀, Rio Janeiro. B.M.

### 33. *Azelina ochracea*, sp. n.

Primaries above from the base to the discal line ochreous speckled with grey and black, and with a subcostal inconspicuous

shining greyish line; both of the ordinary lines double, the centre being grey and the edges black; the extrabasilar slightly oblique and trisinate; the discal line, which is also preceded by a closely approximated black stripe, is oblique, its outer edge being very feebly sinuated between the veins; disk stramineous, crossed by a very indistinct brick-red streak bounded internally by a more or less distinct series of black dots just beyond the discal line; a conical distinct red spot just beyond the middle of the first median interspace; external area towards apex olivaceous; an incomplete submarginal series of black-edged white dots; fringe ochreous: secondaries stramineous, ochraceous at centre of abdominal area and disk, speckled with grey; discal line slightly irregular, black, bordered internally with slaty grey and with several small angular markings of this colour just beyond it; a grey discocellular spot; a submarginal series of externally white-edged black dots; fringe ochreous: body above ochreous, washed with pink. Primaries below cream-coloured, sericeous; costal border ochraceous, speckled with grey; lines of the upper surface grey, the extrabasilar indistinct; a black discocellular lunule; a greyish subapical marginal patch; fringe ochreous, with dark reddish outer edge: secondaries pale stramineous, the costal border and apical area washed with reddish ochreous; a zigzag grey discal line, becoming black on the abdominal area; a black discocellular spot. Body below pale ochraceous; legs cream-coloured, speckled with black. Expanse of wings 1 inch 8 lines.

Two specimens. Rio Janeiro. Type B.M.

### 34. *Azelina crocallaria*.

♂. *Azelina crocallaria*, Guénéé, Phal. i. p. 162. n. 257 (1857).

♂, ♀, Rio Janeiro; ♀, Venezuela. B.M.

The female from Venezuela is very pale, but otherwise agrees with the typical form. The ordinary female, on the other hand, is altogether darker and browner than the male, but with exactly the same pattern.

### 35. *Azelina campinaria*.

*Gonodontis campinaria*, Herrich-Schäffer, Auss. Schmett. pl. lxxix. fig. 458 (1850-69).

*Azelina campinaria*, Guénéé, Phal. i. p. 157. n. 244 (1857).

Brazil.

The body of this species seems to be exaggerated in the figure; it is hardly possible that it can be so large in nature.

36. *Azelina minima*, sp. n.

Allied to the preceding species, but with the general aspect of *A. clysiaria*. Primaries with trisinate outer margin; dark sericeous brownish grey irrorated with black; costal border mottled with whitish; a rather broad irregular central ferruginous band bounded by the ordinary lines, which are blackish and subparallel to the subcostal vein, where the inner line turns inwards at an acute angle, which emits a spur downwards to the end of the cell, and is followed by a small ochreous spot bounded externally by a pure white crescent; fringe varied with cupreous: secondaries with an acute angle at the extremity of the second median branch; slightly paler brownish grey than the primaries, but transversely mottled with slightly darker grey; discal line indistinct, paler than the ground-colour; submedian vein streaked with reddish cupreous in the centre; an incomplete submarginal series of black dots: thorax olivaceous brown; abdomen pale brownish grey. Primaries below sericeous, grey, slightly silvery towards the inner and outer margins; costal area whity brown, striated with darker brown; an indistinct wavy abbreviated discal line from the costa; postdiscal white crescent as above; fringe whitish at the base; secondaries pale cupreous, brown striated with grey, the abdominal border white; a diffused grey discal belt, beyond which the external area is whitish: body below greyish; legs cream-coloured. Expanse of wings 1 inch 2 lines.

Six specimens. Rio Janeiro. Type B.M.

## Section POLYGONIA, Guén.

37. *Azelina anceta*.

*Phalæna-Geometra anceta*, Cramer, Pap. Exot. iv. p. 136, pl. cclx. C, D (1782).

*Azelina ancetaria*, Guénée, Phal. i. p. 158. n. 248 (1857).

Guayaquil. B.M.

Our example does not quite agree with Cramer's figure; so that it is just possible that the Surinam form may be distinct. Without specimens from both localities, however, it would be rash to separate them.

38. *Azelina commixtata*.

*Azelina commixtata*, Walker, Cat. Lep. Het. xxvi. p. 1748 (1862).

Port Natal (*Gueinzius*). B.M.



39. *Azelina fortinata*.

*Polygona fortinata*, Guénée, Ent. Month. Mag. v. p. 41 (1868).

New Zealand, Otago. B.M.

40. *Azelina gallaria*.

*Selenia gallaria*, Walker, Cat. Lep. Het. xx. p. 185. n. 6 (1860).

New Zealand. Type B.M.

41. *Azelina denticulata*, sp. n.

Red-brown: primaries rather pale, the lines reddish chocolate; the inner line  $\Sigma$ -shaped, with pale inner edge, outer line expanded internally into a band, covering, below the cell, about a third of the central belt, its outer edge slightly undulated, the greatest projection being on the interno-median interspace; this line or band is edged externally with pinky whitish; two oblique pale sericeous streaks across the disk, as in *A. lustraria*, *stuposaria*, and one or two other species; an incomplete submarginal series of black dots, more or less prominently pupilled with white: secondaries greyish with reddish ochraceous external border; costal border whitish; a submarginal series of black dots; discal line nearly straight, chocolate-brown, with slender whitish edge: thorax darker than abdomen, prominently crested. Under surface reddish brown; a slender, externally white-edged, black discal line, straight on the primaries, irregularly undulated on the secondaries: primaries with the submedian area grey, the median interspaces black towards the base, but crossed from the middle by a large pyriform white patch; internal area silky white; two or three submarginal dots with more or less prominent white pupils: secondaries with a large black spot with cream-coloured margin, and divided by veins of the same colour at the inferior angle of the cell; abdominal border and fringe pale buff; legs cream-coloured, streaked with dark brown. Expanse of wings 1 inch 9 lines.

Two specimens. Ecuador (*Buckley*). Type B.M.

The primaries of this species are slightly irregular, as in *A. poaphilaria*; but the secondaries are distinctly dentated, the margin from the third median branch to the anal angle bearing three well-defined and slightly incurved processes of equal length and width. The species therefore, although in pattern it most resembles *A. Hübneraria* and allies, seems by its structure to come nearer to *A. clysiaria*; it nevertheless differs somewhat in form from all described species.

Section approaching *SYNEMIA*.42. *Azelina latrata*.

*Azelina latrata*, Guénée, Phal. i. p. 163. n. 259 (1857).

Brazil, Colombia.

43. *Azelina caninata*.

*Azelina caninata*, Guénée, Phal. i. p. 163. n. 260 (1857).

Colombia.

If I have rightly understood the description of the form of these two species, they must be allied to *A. clysiaria*, in which the primaries are biangulated as in typical *Synemia*, and the secondaries furnished with incurved marginal denticles at the extremities of the second and third median branches. Herr Snellen figures under this name (Tijd. Ent. xvii. pl. 2. fig. 4) a *Lycimna* allied to *L. succedens*.

44. *Azelina decisaria*.

*Azelina decisaria*, Herrich-Schäffer, Zool.-mineral. Ver. Corr. Blatt. xxiv. p. 185 (1870).

Cuba.

45. *Azelina clysiaria*.

*Azelina clysiaria*, Felder & Rogenhofer, Reise der Nov., Lep. v. pl. cxxiii. fig. 12 (1876).

Rio Javary, Rio Purus, Rio Solimões, Rio Jutahi (*Dr. Trail*). B.M.

The figure of this species is too pale in colouring and does not correctly represent the uncate character of the denticles on the inner half of the external margin of the secondaries.

46. *Azelina juruana*, sp. n.

Nearly allied to the preceding species, but considerably smaller, of a sandy testaceous colour speckled with black, with no distinct triangular yellowish costal patch on the primaries, but the oblique black dash commencing the "extra-basilar" line and the dark commencement of the discal line even more strongly defined, the red inner border of the latter line only indicated by a ferruginous spot beyond the transparent discocellular marking, and a second on the submedian vein; the apex with an irregular reddish-brown spot diffused externally, two or three olivaceous spots on the disk; a submarginal series of black dots, pupilled with white towards the apex; fringe grey: secondaries washed with rust-red towards

the abdominal margin; discal line nearly straight, brown with a white edge; discocellular marking reduced to a transparent point; no orange or rust-red spots just beyond it as in *A. clysiaria*; a subanal ferruginous streak and an indistinct olive-brown subapical marginal spot, which, however, is sometimes absent; a submarginal series of black dots. Under surface sordid white, striated with grey; discocellular markings white with blackish edges; a zigzag discal brown line dotted with black, two or three dusky patches on the disk and a submarginal series of black dots as above: body below sandy whitish. Expanse of wings 1 inch 5 lines.

Rio Jurua, Amazons (*Dr. Trail*). Type B.M.

A very distinct and well-marked species of the form of *A. clysiaria*, and with the ordinary lines of the primaries similar.

#### Section SYNEMIA, Guén.

##### 47. *Azelina speciosata*.

*Azelina speciosata*, Guénée, Phal. i. p. 159. n. 250 (1857).

Ecuador. B.M.

Described from a male obtained in Colombia. The female is considerably paler in colour than the male. It is absurd to think of separating this species generically from *A. polygonaria*.

##### 48. *Azelina guruparia*.

♀ *Azelina guruparia*, Felder, Reise der Nov., Lep. v. pl. cxxiii. fig. 21 (1876).

♂ Rio Jutahi (*Dr. Trail*). B.M.

The male is smaller than the female, with the coloration of the primaries more like that of Felder's figure of *A. saturata*, the apex being dark and the external area buff streaked with whitish.

##### 49. *Azelina decora*, sp. n.

Allied to *A. speciosata*, with almost the same pattern, the primaries altogether redder; the olivaceous basal area replaced by purplish brown; the olive borders of the ordinary black lines narrower and darker; the pale patch on the internal area just beyond the discal line much narrower, grey bordered externally with white; the external third of the primaries bright cupreous orange, with the area nearest to external angle and a subapical patch slightly darker and speckled with grey; no white zigzag discal stripe: secondaries with the discoidal area dull ochreous, the costal and abdominal areas to the discal line cream-coloured mottled with grey; discal line

whitish, arched, partly edged externally by the grey mottlings; external area bright ochreous outwardly, shading into orange internally, where it is mottled with grey; a marginal orange line spotted with dark grey. Body and under surface very like *A. speciosata*, excepting that the subapical semitransparent white spot is wanting. Expanse of wings 1 inch 7 lines.

Rio Janeiro. Type B.M.

50. *Azelina pumaria*.

*Pergama pumaria*, Felder & Rogenhofer, Reise der Nov., Lep. v. pl. cxxiii. fig. 15 (1876).

Espirito Sancto, Brazil; Rio Purus (*Dr. Trail*). B.M.

51. *Azelina polygonaria*.

*Synemia polygonaria*, Guénéé, Phal. i. p. 164. n. 261 (1857) Herrich-Schäffer, Auss. Schmett. figs. 412, 413 (1850-58).

Brazil.

The two following species cannot belong to *Azelina*; they are described as having the "fore wings acute," the first with rounded exterior border and the second with the exterior border angular. The genus, though it occurs in New Zealand, is at present unknown from Australia.

*Azelina inordinata*.

*Azelina inordinata*, Walker, Char. undescr. Het. Lep. p. 74 (1869).

Australia. Melbourne Museum.

*Azelina biplaga*.

*Azelina biplaga*, Walker, Char. undescr. Het. Lep. p. 75 (1869).

Australia. Melbourne Museum.

*Doubtful Species.*

52. *Azelina asilasaria*.

*Azelina asilasaria*, Walker, Cat. Lep. Het. xx. p. 194. n. 24 (1860).

Rio Janeiro.

53. *Azelina amyclaria*.

*Azelina amyclaria*, Walker, Cat. Lep. Het. xx. p. 195. n. 25 (1860).

Brazil.

54. *Azelina? atrapesaria*.

*Azelina? atrapesaria*, Walker, Cat. Lep. Het. xx. p. 196. n. 27 (1860).

— ?

Of this species no trace, either of the specimen or the printed label, appears in the cabinet; and as Walker has made no note

in the Catalogue as to what he has done with it, I can only suppose that it is a species which he omitted to label when described, and which has consequently become the type of some species in another genus.

The following group is so close to *Azelina* that it may save the multiplication of synonyms to refer to it here.

*Paragonia deustata.*

*Paragonia deustata*, Felder, Reise der Nov., Lep. v. pl. cxxiv. fig. 8 (1876).

Chili.

*Paragonia subornata.*

*Macaria* ?? *subornata*, Walker, Cat. Lep. Het. xxvi. p. 1644 (1862).

Monte Video (*Darwin*). Type B.M.

Nearly allied to the preceding species.

VI.—*Supplementary Notes on the Flints and the Lithological Identity of the Chalk and Recent Calcareous Deposits in the Ocean.* By Surgeon-Major WALLICH, M.D.

It may be in the recollection of those who have read my former observations on the subject \* that, in default of any available direct means of proving the lithological identity of the chalk and calcareous deposits of the Atlantic and other oceans, I was obliged to rely chiefly on collateral evidence in support of the view I advocated—namely, that the extraordinary contrast between the percentages of silica, supposed to characterize these two formations, does not in reality exist, but is altogether based on the fallacious standard employed in making the comparison. I maintained that the nearly total absence of disseminated silica now observable in the Chalk is not due to an almost infinitesimal quantity of that substance having originally been present in it when it rested as mud on the Cretaceous sea-bed, but to the fact of nearly the whole of the silica it then contained having been then and there eliminated from it through the agency of colloidal sponge-protoplasm. For a like reason I contended, that the large percentage of silica now met with in the surface-mud of the recent calcareous areas does not furnish a trustworthy index to the percentage which would be found were it possible

\* "A Contribution to the History of the Cretaceous Flints," Quart. Journ. Geol. Soc., Feb. 1880; and "On the Origin and Formation of the Flints of the Upper or White Chalk," Ann. & Mag. Nat. Hist., Feb. 1881.